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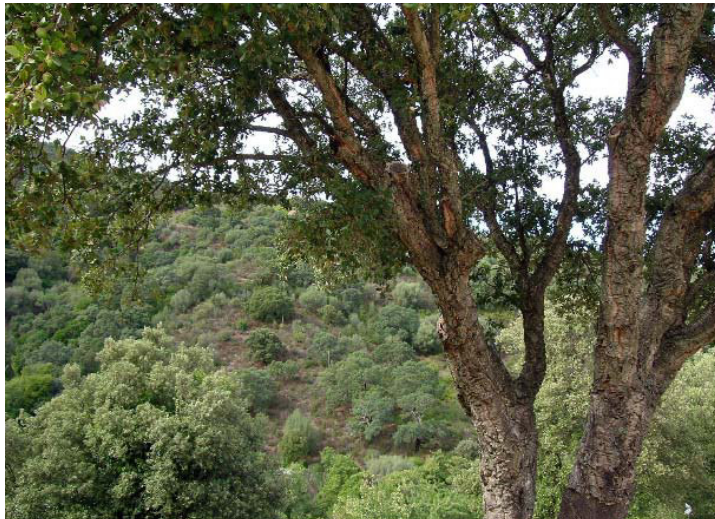


*Forestry and Wood  
Research Centre of the  
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## INTERNATIONAL CONGRESS ON CORK OAK TREES AND WOODLANDS

**Conservation, Management, Products  
and Challenges for the Future**



**3° National Congress of Cork**

**Sassari, May 25 – 26 2017**

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### ***Tipiditappi***



*Sughero d'albero fatto a pezzetti,  
tipi di tappi , quelli che vuoi.  
Tagliali lunghi, tagliali stretti,  
tipi di tappi, fatti da noi.  
Taglialo bene, taglialo tondo,  
tipi di tappi, quanti ne vuoi.  
Tappi di sughero per tutto il mondo,  
tipi di tappi fatti da noi.*  
*(Cecchi-Tognolini, Filastrocche e Canzoni)*

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## ORAL PRESENTATION

Session 3: *Multifunctionality of cork oak systems, biodiversity, climate change mitigation and landscape/ecosystem services*



## CLIMATE CHANGE INFLUENCES ON ANNUAL CORK GROWTH AND QUALITY

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Since the last century, the global surface temperature has increased between 0.5 and 2 °C and future predictions show further increases linked with reductions or shifts of precipitation. In some regions, these occurrences are determining severe water deficits and a general climatic unpredictability. In the Mediterranean region, exacerbated drought conditions and an increase in frequency of extreme events are currently observed. Cork oak (*Quercus suber* L.) is widely spread in the Western Mediterranean area and its ecological and economic importance is well known. However, severe concerns exist on the resilience capacity of the related ecosystems. In the current global change it is fundamental to protect and conserve the biodiversity of this species, especially by identifying adaptive traits and highlighting adaptive strategies that the species is able to display. In particular, this study aims i) to study the inter and intra-population variability of annual cork growth rate in relation to climatic anomalies and ii) to identify possible adaptive traits in order to drive strategic breeding programmes to favour species adaptation. Annual variations of cork ring growth were analyzed in relation to main climatic drivers (temperature and precipitations) from 90 cork oak individuals from three different populations in Sardinia (Fiorentini, M. Olia, Limbara Sud). For each population 30 cork plates (10 x 10 cm) were collected during the stripping of mature cork oaks. The plants were randomly selected from three sub-areas along the altitudinal gradient covered by the populations. For each sample total bark thickness was measured, rings were counted and cross-dating was carried out. The mean annual radial growth was measured and correlated with climate conditions and carbon isotope composition of the rings. This allowed to assess the influence of the main climatic factors on the pattern of ring growth. Furthermore, the climatic effects on cork quality were investigated.

Keywords: *Quercus suber*, adaptive traits, climate change, carbon isotope composition, cork quality